WHAT IS CLAIMED IS:

1. An interface apparatus in a communication network for converting a frame, which has been received from a digital transmission line and has overhead and a payload, to ATM cells, assembling a frame using ATM cells that have been received from an ATM network, and sending the assembled frame to a digital transmission line, said interface apparatus comprising:

cell conversion zone specifying means for specifying, as a cell conversion zone, the portion of a frame that contains the payload and part of the overhead , which indicates each of the starting positions of data blocks that have been multiplexed into the frame, and generating a signal that specifies the cell conversion zone;

pointer creation means which, when a predetermined position in the cell conversion zone is adopted as a reference position, is for creating a pointer that specifies this reference position; and

cell conversion means for converting data in the cell conversion zone to cells based upon the signal that specifies the cell conversion zone, and for including this pointer in a prescribed cell.

2. The apparatus according to claim 1, further comprising a header creation unit for creating an SAR-PDU header when said cell is an AAL Type-1 cell;

wherein (1) if a pointer exists, said cell conversion means creates a payload of one cell by

arraying an SAR-PDU header first, a pointer second and data of the cell conversion zone following the pointer, and (2) if a pointer does not exist, said cell conversion means creates a payload of one cell by arraying an SAR-PDU header first and data of the cell conversion zone second following the SAR-PDU header.

3. The apparatus according to claim 2, wherein said pointer creation unit includes:

a downcounter, which is preset to (M-1) by generation of the signal that specifies the cell conversion zone, for subsequently downcounting a byte timing signal generated in the period of the cell conversion zone and outputting (M-1) to 0 cyclically, where M represents the number of bytes within the cell conversion zone and the reference position is the leading byte of the cell conversion zone;

an octet position monitoring unit for monitoring octet position within a cell payload by counting the byte timing signal;

a sequence-count monitoring unit for being counted up at the position of the leading octet of the cell payload and outputting a sequence count SC of from 0 to 7 in a case where one cycle is composed of eight cells; and

a pointer decision unit which, when the octet position within a cell payload is at the leading octet position, the sequence count is an even number and, moreover, the value of a count recorded by the

downcounter falls within the range of 93 to 0, is for adopting this value of the count as a true pointer;

wherein said cell conversion means places the true pointer at a second octet position of the payload.

4. The apparatus according to claim 3, wherein a pointer always is placed in any one of the eight cells of one cycle, and, if the true pointer cannot be placed in any cell of one cycle, said pointer decision unit regards a cell for which SC = 6 holds as a P-format cell in which a pointer is placed and places a false pointer in a second byte of the payload of this cell.

5. The apparatus according to claim 4, further comprising:

a receive buffer for storing, in sync with a buffer write clock, an AAL Type-1 cell payload that has been received from an ATM network, and for reading out the cell payload in sync with a buffer read-out clock;

a detector for detecting a pointer from a payload that has been read out of said receive buffer;

selector means for outputting data of the payload from a third byte onward if a pointer is detected and outputting data of the payload from a second byte onward if a pointer is not detected;

a controller having a frame counter, which is preset to (R-1-pointer) when the true pointer is detected, for subsequently counting up the byte timing signal and outputting 0 to (R-1) cyclically (where R represents the total number of bytes of a frame), said

controller outputting a starting position signal, which indicates the starting position of the cell conversion zone, when the value of the count is a value that corresponds to the reference position of the cell conversion zone; and

a frame assembler for assembling a frame using data output from said selector means on the basis of the starting position signal.

6. An interface apparatus in a communication network in which when a frame that has been received from a digital transmission line and that has overhead and a payload is converted to AAL Type-1 ATM cells, part of the overhead data, which indicates each of the starting positions of data blocks that have been multiplexed into the frame, and the payload are defined as being at least a cell conversion zone and a predetermined position of the cell conversion zone is adopted as a reference position, wherein a true pointer that specifies this reference position is included in a prescribed cell and, if a true pointer cannot be placed in any one of eight cells of one cycle (SC = 0 to 7), then a cell for which SC = 6 holds is regarded as a P-format cell in which a pointer will be placed, a false pointer is placed in this cell and the cell is sent to an ATM network, and a frame is assembled by AAL Type-1 cells that have been received from the ATM network and the frame is sent to a digital transmission line, said interface apparatus comprising:

a receive buffer for storing, in sync with a buffer

write clock, an AAL Type-1 cell payload that has been received from an ATM network, and for reading out the cell payload in sync with a buffer read-out clock;

a detector for detecting a pointer from a payload that has been read out of said receive buffer;

selector means for outputting data of the payload from a third byte onward if a pointer is detected and outputting data of the payload from a second byte onward if a pointer is not detected;

a controller having a frame counter, which is preset to (R-1-pointer) when a true pointer is detected, for subsequently counting up the byte timing signal and outputting 0 to (R-1) cyclically (where R represents the total number of bytes of a frame), said controller outputting a starting position signal, which indicates the starting position of the cell conversion zone, when the value of the count is a value that corresponds to the reference position; and

a frame assembler for assembling a frame using data output from said selector means on the basis of the starting position signal.

7. The apparatus according to claim 6, further comprising:

cell determination means (1) which, on the basis of a CRC check and parity check of an SAR-PDU header that has been placed at the beginning of a cell payload, determines whether the SAR-PDU header is valid or invalid, and (2) detects cell loss / erroneous insertion

based upon result of the determination and continuity of sequence count SC;

write means for writing, to the SAR-PDU header, a flag indicating result of the valid/invalid determination and a flag indicating whether a dummy cell has been inserted owing to cell loss; and

means which, on the basis of the result of cell determination, is for adding the SAR-PDU header to which the flags have been written onto a cell payload or dummy payload received from the ATM network and inputting this payload to said cell buffer;

wherein said detector for detecting the pointer includes:

pointer detection means for detecting a true pointer;

a downcounter, which is preset to a pointer value by detection of a true pointer, for subsequently downcounting a byte timing signal generated in the period of the cell conversion zone and outputting (M-1) to 0 cyclically, where M represents the number of bytes within the cell conversion zone and the reference position is the leading byte of the cell conversion zone; and

P-format cell determination means which, when a cell of interest is a cell for which the sequence count SC is an even number, the value of a count recorded by said downcounter falls within the prescribed range of 0 to 93 at the timing of the leading octet of a cell

payload, the flags of the cell of interest indicate invalidity or dummy cell insertion and a P-format cell has not yet been detected in one cycle, is for deciding that said cell of interest is a P-format cell.

8. The apparatus according to claim 7, wherein when the cell of interest is a cell for which SC = 6 holds, the flags of this cell of interest indicate invalidity or dummy cell insertion and a P-format cell has not yet been detected in one cycle, said P-format cell determination means decides that said cell of interest is a P-format cell.

9. The apparatus according to claim 7, wherein when the cell of interest is a cell for which the sequence count SC is an even number, a CSI bit of the SAR-PDU header is "1" and the value of a count recorded by said downcounter falls within the prescribed range of 0 to 93 at the timing of the leading octet of a cell payload, said pointer detection means decides that a pointer of said cell of interest is a true pointer.

10. The apparatus according to claim 6, further comprising:

cell determination means (1) which, on the basis of a CRC check and parity check of an SAR-PDU header that has been placed at the beginning of a cell payload, determines whether the SAR-PDU header is valid or invalid, and (2) detects cell loss / erroneous insertion based upon result of the determination and continuity of sequence count SC;

write means for writing, to the SAR-PDU header, a flag indicating result of the valid/invalid determination and a flag indicating whether a dummy cell has been inserted owing to cell loss; and

means which, on the basis of the result of cell determination, is for adding the SAR-PDU header to which the flags have been written onto a cell payload or dummy payload received from the ATM network and outputting this payload;

a storage unit for storing one cycle of cell payloads of AAL Type 1 output from output means; and

P-format cell determination means for examining the cells of one stored cycle and, when a P-format cell has been lost, for (1) deciding that a cell for which the sequence count SC is an even number and for which a flag indicates invalidity or insertion of dummy data is a P-format cell, and (2) making a CSI bit of this cell equal to "1" and inserting a false pointer;

an AAL Type-1 cell payload being written to said receive buffer after the examination.

11. The apparatus according to claim 10, wherein said P-format cell determination means examines the cells of one stored cycle and, when two or more P-format cells are found to exist, decides that a cell for which the flag indicates "valid" and "non-insertion of dummy data" is a P-format cell.

12. The apparatus according to claim 6, further comprising:

cell determination means (1) which, on the basis of a CRC check and parity check of an SAR-PDU header that has been placed at the beginning of a cell payload, determines whether the SAR-PDU header is valid or invalid, and (2) detects cell loss / erroneous insertion based upon result of the determination and continuity of sequence count SC;

write means for writing, to the SAR-PDU header, a flag indicating result of the valid/invalid determination and a flag indicating whether a dummy cell has been inserted owing to cell loss;

means which, on the basis of the result of cell determination, is for adding the SAR-PDU header to which the flags have been written onto a cell payload or dummy payload received from the ATM network and inputting this payload to said cell buffer;

a storage unit for storing one cycle of cell payloads of AAL Type 1 output from said receive buffer; and

P-format cell determination means for examining the cells of one stored cycle and, when a P-format cell has been lost, for (1) deciding that a cell for which the sequence count SC is an even number and for which a flag indicates invalidity or insertion of dummy data is a P-format cell, and (2) making a CSI bit of this cell equal to "1" and inserting a false pointer;

an AAL Type-1 cell payload after the examination being input to said pointer detector and selector.

13. The apparatus according to claim 12, wherein said P-format cell determination means examines the cells of one stored cycle and, when two or more P-format cells are found to exist, decides that a cell for which the flags indicate "valid" and "non-insertion of dummy data" is a P-format cell.

14. The apparatus according to claim 6, further comprising P-format cell determination means for examining the AAL Type-1 cell payload and, if a P-format cell cannot be detected in one cycle, deciding that a P-format cell for which SC = 6 holds is a P-format cell, making a CSI bit of this cell equal to "1" and inserting a false pointer; wherein

an AAL Type-1 cell payload after the examination is written to said receive buffer.